2006 Census of Technology Report

"Making a Positive Difference Through Education and Service"
Dr. D. Kent King, Commissioner

November 2006

Table of Contents

I. Introduction

The Census of Technology (COT) is designed to assess Missouri's continuing investment in K-12 education technologies and to help guide forward efforts. It provides important data for the Department of Elementary and Secondary Education (DESE) to share with state and national decision-makers to increase public awareness and advance public policy and support for education technology. It provides local school districts with data to help identify needs and develop strategies to facilitate school improvement processes and compare district progress with statewide data. The COT is aligned with the *2002-2006 Missouri Education Technology Strategic Plan* (METSP) and is a primary data source for measuring progress toward meeting the state goals and objectives. A cross reference of the 2006 COT items and the METSP goals and objectives is provided as an appendix to this report.

A technology survey has been collected annually since 1997. Prior to 2001, DESE contracted with the University of Missouri's Office of Social and Economic Data Analysis to administer the project. In 2001, the census was incorporated into the April cycle of DESE's online core data collection system. The 2001 COT was the first to be completed by all districts; data collected prior to 2001 were adjusted to estimate the entire population.

The COT has two parts: a district-level survey and a school building-level survey. The District Census assesses the levels of planning and training for the district as a whole and concentrates on hardware, software, and levels of connectivity for the administrative buildings and offices. Completed by district-level administrators and/or technology specialists, the District Census includes information for all Missouri school districts (524).

The Building Census assesses planning and training needs for individual school buildings and focuses on hardware and levels of Internet connectivity in computer labs, libraries, and classrooms. Completed by building-level administrators or technology contacts, the Building COT collects data from preschools, elementary schools, middle schools, junior high schools, high schools, area career centers, and the majority of charter schools (those in operation at least one full year prior to the Census date). Exempted buildings include juvenile centers, special education cooperatives, buildings where attendance is reported at another building (such as a gifted center), or other buildings with no enrollment data.

This *2006 Census of Technology Report* arranges the 2006 data for both the district and building levels according to the following areas: technology planning, technology professional development, hardware and support, Internet connectivity-distance learning, technology usage, and technology funding. Where feasible and appropriate, this report presents and compares information from previous years. Aggregated responses for the district and building census forms are provided in the Appendix section of this report.

This report is one of several documents that examine the use and effectiveness of education technologies in Missouri. Other evaluation information can be found in the Missouri Education Technology Strategic Plan reports, eMINTS Program research reports, annual technology program reports, project descriptions, and annual evaluation narratives – all of which may be accessed from the Instructional Technology website at http://dese.mo.gov/divimprove/instrtech.

For additional information regarding the Census of Technology, contact the Instructional Technology section by telephone at 573-751-8247 or email at instrtech@dese.mo.gov.

II. Executive Summary

A. Overview

The Census of Technology continued to show modest gains in the past year. While modest, the gains represent consistent improvement in Missouri's schools with regards to technology readiness and use during the 2005-2006 school year. Despite another year afflicted with sluggish economies at the state and local levels and significant decreases in state funds (including another year of not funding the Technology Acquisition Grant Program), Missouri schools continued to improve access to education technologies for administrators, faculty, staff, and students and report increases in their quality uses of those technologies.

While advancements are slight, the 2006 data indicate that more schools are connected to one another and the Internet and more educational technologies are provided for teachers and students. Students, teachers, and administrators continue to become better skilled in using education technologies and, more importantly, continue to increase the frequency in which they use the technologies in meaningful ways.

INTERNET ACCESS
- Of the 2,229 school buildings reporting, over 2,155 or 97 percent have a partial T1 or higher Internet connection.

COMPUTER ACCESS
- Out of the 328,058 computers (includes handhelds) located across the buildings, over 305,000 computers (93 percent) are located in instructional rooms: 183,915 in classrooms, 97,212 in computer labs, and 24,240 in library media centers.
- The 2006 number of students per computer (all computers located across all buildings) is 2.73, compared to 3.09 in 2005, 3.26 in 2004, 3.29 in 2003 and 3.8 in 2002 and 2001.
- The number of students per computer in all instructional rooms is 2.94, compared to 3.48 in 2004, 3.66 in 2003, 4.21 in 2002, 4.34 in 2001, 4.65 in 2000, 6.4 in 1999, and 8.15 in 1998.
- The number of students per computer in classrooms is 4.88, compared to 5.55 in 2005, 5.89 in 2004 and 6.42 in 2003.

Students per Computer in Instructional Rooms 1998-2006
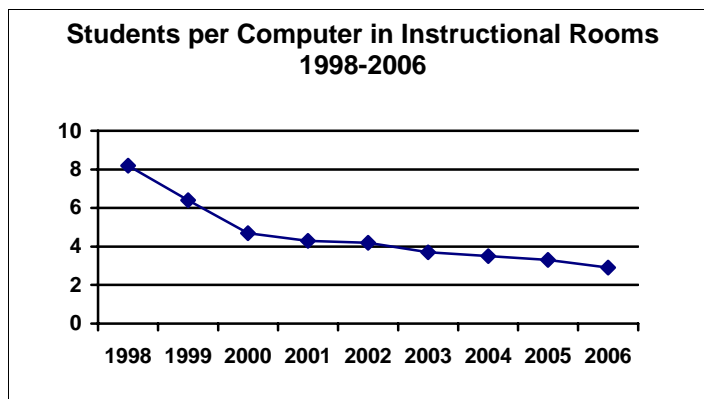
> The number of students per computer in instructional rooms has decreased from 8.15 students in 1998 to 2.94 students in 2006.

PRINCIPAL TECHNOLOGY SKILLS
- Approximately 92 percent of principals have intermediate and/or advanced technology skills, compared to 91 percent in 2005, 92 percent in 2004, 90 percent of principals in 2003 and 82 percent in both 2002 and 2001.

- Schools report that 97 percent of the principals routinely use email – the same rate reported in 2005, 2004 and 2003, compared to 92 percent in 2002 and 74 percent in 2001.
- The rate of principals routinely conducting online research is 81 percent, compared to 79 percent in 2005, 80 percent in 2004, 79 percent in 2003, 69 percent in 2002, and 58 percent in 2001.

TEACHER TECHNOLOGY SKILLS
- Schools report that 76 percent of teachers routinely use educational software, compared to 78 percent in 2005 and 2004, 76 percent in 2003, 71 percent in 2002, and 59 percent in 2001.
- The rate of teachers routinely using technology for lesson plan preparation is 68 percent, compared to 66 percent in 2005 and 2004, 64 percent in 2003, 59 percent in 2002, and 45 percent in 2001.
- In 2006, 82 percent of teachers have intermediate and/or advanced technology skills, compared to 81 percent in 2005 and 2004, 79 percent in 2003, 76 percent in 2002, and 72 percent in 2001.

➢ The percent of teachers with intermediate and advanced technology skills has increased from 59 percent in 1998 to 82 percent in 2006.

Percent Teachers with Intermediate and Advanced Skills 1998-2006
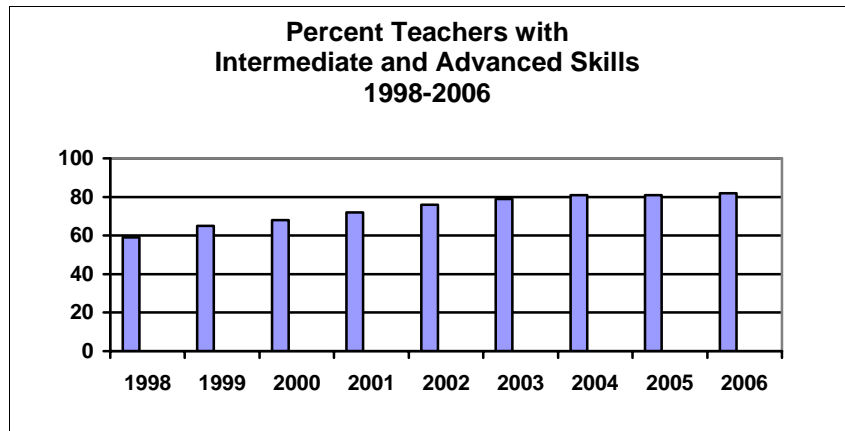
STUDENT TECHNOLOGY SKILLS
- Schools report that 79 percent of students routinely use educational software, compared to 80 percent in 2005, 81 percent in 2004, 80 percent in 2003, 75 percent in 2002, and 62 percent in 2001.
- Approximately 90 percent of eighth-grade students are technology literate, the same number as 2005.

B. Bulleted List of 2006 Findings

TECHNOLOGY PLANNING
- All districts have state-approved technology plans
- 2,190 school buildings (98 percent) have building technology plans

TECHNOLOGY PROFESSIONAL DEVELOPMENT
- Over 90 percent of districts have board-approved education technology standards
  - 84 percent have locally developed standards
  - 35 percent have adopted the National Educational Technology Standards (NETS)
  - 91 percent have standards for middle school/junior high students (grades 6-8), 89 percent for students in grades 3-5, 86 percent for PreK-2 elementary students, and 77 percent for high school students (grades 9-12)

- 83 percent have standards for teachers, 81 percent for school administrators, and 73 percent for support services staff
  - The percentages of staff with intermediate and/or advanced skills in the use of education technology are as follows:
    - 98 percent of technology staff
    - 92 percent of school building administrators
    - 82 percent of teachers
    - 69 percent of school services staff
  - buildings report having a total of 1,254 eMINTS-trained teachers
  - buildings report having a total of 153 individuals involved in the Professional Development for Education Technology Specialists (PD4ETS) train-the-trainer program.

HARDWARE AND SUPPORT
- On average, districts provided 1.89 FTE for technical maintenance and support
  - School building technical support was most likely provided by district staff, followed by school certificated staff and other school staff
- School buildings provide access to 328,058 computers
  - 82 percent are PC or PC-compatible, 14 percent are Apple/Mac, and 4 percent are handheld computers
  - 93 percent of all computers are located in a classroom, computer lab, or library media center (LMC)
- The typical time-frame for resolving technical problems and repairs is two-to-three working days

INTERNET CONNECTIVITY AND DISTANCE LEARNING
- 92 percent of the districts have district-managed networks that connect all district buildings
- Most district networks support:
  - accounting/payroll – 99 percent of districts
  - student attendance – 95 percent of districts
  - library catalog – 93 percent of districts
  - email/communications and library catalog – 93 percent of districts
  - food service – 86 percent of districts
  - discipline reports – 80 percent of districts
- 98 percent of the school buildings have a partial T1 or higher Internet connection
- Buildings support distance learning systems
  - cable television – 1,191 buildings
  - interactive television – 434 buildings
  - satellite reception – 405 buildings
  - desktop videoconferencing – 265 buildings

TECHNOLOGY USAGE
- 99 percent of districts report having technology integrated into one or more core content curriculum:
  - 98 percent – communications arts
  - 94 percent – science
  - 92 percent – mathematics
  - 92 percent – social studies
- Almost all districts provide email accounts to staff:
  - 97 percent – school administrators
  - 95 percent – teachers
  - 92 percent – other district staff

- Fewer numbers of districts provide email accounts to students:
  - 111 – high school students
  - 54 – middle school students
  - 31 – students in grades 3-5
  - 9 – students in PreK-2
- Buildings report the following routine use of technology, by application and user type:

Application	Administrators	Teachers	Students
Educational software	44%	76%	79%
Email	97%	94%	11%
Electronic Resources:			
EBSCO host	16%	23%	22%
Electronic encyclopedia	14%	30%	34%
Gale	3%	6%	6%
Newsbank	5%	7%	7%
ProQuest	2%	3%	3%
SIRS	2%	4%	5%

- Buildings estimate the following routine uses of technology, by function and user type:

Function	Administrators	Teachers	Students
Produce media, web, or multimedia products	57%	51%	43%
Produce written or print products or presentations	80%	80%	60%
Communicate with peers, experts, others	95%	88%	21%
Communicate with parents and students	83%	74%	12%
Conduct online research	81%	76%	56%
Participate in online courses (this year)	11%	12%	2%
Manage student records	85%	76%	NA
Track student performance	84%	77%	NA
Assess student performance	74%	72%	NA
Deliver and present instruction	37%	60%	NA
Prepare lesson plan(s)	11%	68%	NA

- Leadership and support of teachers in integrating technology is provided by:
  - library media specialist – 60 percent of buildings
  - school administrator – 54 percent of buildings
  - teacher – 55 percent of buildings
  - district technology staff – 54 percent of buildings
  - instructional technology specialist – 34 percent of buildings
- Buildings estimate that 50 percent of the teaching staff fully integrate technology into the curriculum.
- Almost all buildings have one or more technology-mediated feedback systems:
  - email – 2,136 buildings – 96 percent
  - voice mail – 1,196 buildings – 54 percent
  - homework hotlines via the web – 319 buildings – 14 percent
  - automated absentee calling systems – 471 buildings – 21 percent
  - homework hotlines via the telephone – 294 buildings – 13 percent
  - listservs – 360 buildings – 16 percent

TECHNOLOGY FUNDING
- Districts projected spending $110.9 million in 2005-06 for technology-related activities and purchases.
- 404 districts (77 percent) applied for E-rate discounts in 2005-06:
  - districts projected a total of $25.3 million in discounts
  - 97 percent of the discounts are used to support education technology

III. Detailed Findings

This section of the *2006 Census of Technology Report* details all of the district- and building-level data, compares current data with previous years' data, and makes note of trends and/or anomalies found in data from the last several years.

A. District Census

All 524 Missouri school districts completed the COT in 2006. The District Census is a quick survey, comprised of 11 items that address technology planning, standards, administrative systems and support, and budgeting. See Appendix A for copies of the district and school building surveys, completed with aggregated data, and Appendix B for a cross reference of the 2006 COT items and the Missouri Education Technology Strategic Plan (METSP) goals and objectives.

Even with the continued loss of state funding (i.e., the Technology Acquisition Grant or TAG program), district responses to the 2006 COT indicate continued progress in technology readiness and use. Missouri districts appear to be making effective use of technology for administrative purposes, managing networks and systems that help improve district administration, data management, and communication.

TECHNOLOGY PLANNING
The district-level COT examines the presence of a board-approved and state-approved long-range education technology plan. A school district's long-range technology plan provides a road map for how the district will implement strategies that promote the district's mission, advance its comprehensive school improvement plan, and improve teaching and learning through the use of education technologies. DESE began approving technology plans in 1997 as a requirement for the E-rate program. Beginning in 1999, a state-approved technology plan became a requirement for participation in the state's technology grant programs and the MOREnet Technology Network Program. With the passing of the federal No Child Left Behind Act in 2001, DESE developed the 2002-2006 Missouri Education Technology Strategic Plan and updated accordingly the scoring criteria used to approve district education technology plans.

Early district technology plans dealt mostly with hardware and equipment and did little to address integration, student learning, or technology professional development. Now plans are much more comprehensive, as a result of the state plan and the scoring criteria for local plans both focusing on the development of plans that align with comprehensive school improvement plans and promote effective teaching strategies, student achievement, and adequate infrastructure and technical support.

Item 1 – State-approved technology plans
All districts have state-approved district technology plans. All district plans are approved using the scoring guide developed in 2002 in response to the No Child Left Behind Act and the 2002-06 Missouri state plan.

TECHNOLOGY PROFESSIONAL DEVELOPMENT
Professional development is a critical factor in teachers using technology in meaningful and effective ways. In November of 1997, the State Board of Education established policy that required buildings to allocate amounts equal to 20 percent of state technology grant funds for technology-related training. The policy went into effect for the 1998-1999 school year. The Title II.D (Ed Tech) Program, begun in 2002-2003, requires that 25 percent of formula and/or competitive grant funds be earmarked for professional development.

Data collected over the previous years indicate that teachers are increasingly interested in professional development sessions that address how to integrate technology into curriculum and instructional teaching strategies. Professional development is most effective when tied to comprehensive school improvement plans and to local, state, and national educational technology standards. The Missouri technology plan endorses the National Educational Technology Standards (NETS) for students, teachers, and school administrators developed by the International Society for Technology in Education (ISTE).

Item 2 – Educational technology standards
Added to COT in 2003, item two asked about the educational technology standards in place in the district. Standards provide guidelines for developing curriculum and guiding teacher and student behavior; they define a common agreement on what ought to be taught or learned. Also, educational technology standards serve as guidelines for planning technology-based activities in which students achieve success in learning communication and life skills.

In 2006, the vast majority of districts report having board-approved educational technology standards. Figure 1 shows that over four out of five (439) districts have standards developed by the district, with over three of ten (185) having adopted the National Educational Technology Standards, and nearly one of ten (51) adopting the Standards for Technological Literacy (STL) endorsed by the International Technology Education Association (ITEA). Many districts incorporate the national standards and locally-approved standards. Twenty five districts report having other standards, while 40 districts (7 percent) report having no board-approved standards. The 2006 data closely parallel the data collected in 2005, 2004 and 2003, but also show a modest increase in the number of districts adopting the NETS (as proposed in the state plan) and a decrease in the number of districts having no board-approved standards. Many of those districts adopting the NETS also incorporate locally developed standards.

Figure 1

Percent Districts with Education Technology Standards, by Standard Type, 2003-2006
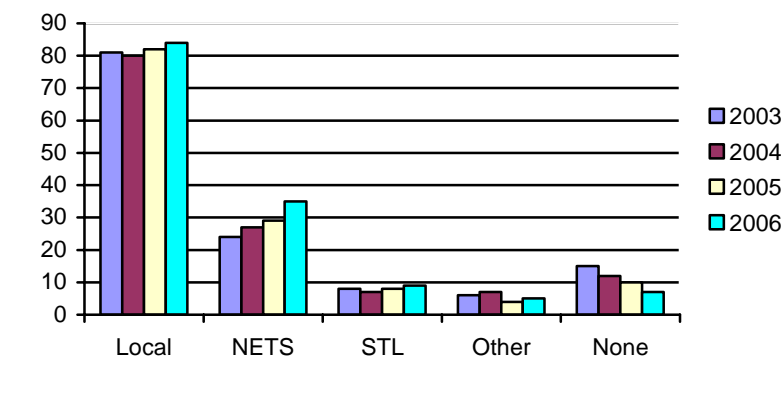
Over ninety percent of districts reported having technology standards for students: 449 districts have established standards for PreK-2 students, 464 have standards for students in grades 3-5, 473 have standards for middle school students (grades 6-8), and 403 have standards for high school students. One hundred percent of districts that house area career centers also indicate having standards for career center students. The number of districts with established technology standards has increased for all grade levels each year since 2003, as indicated in Figure 2.

Figure 2

Number Districts with Student Technology Standards, by Grade Spans, 2003-2006
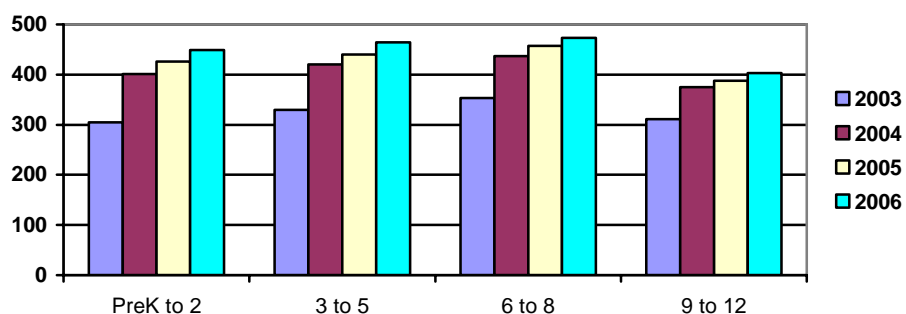
Over four of five districts (83 percent) report having technology standards for district employees: 434 districts have standards for teachers, 426 have standards for administrators, and 383 have standards for support services staff. Similar to the status of student standards, the number of districts that report having educational technology standards for school employees has increased from 2003 to 2006, as illustrated in Figure 3 below.

Figure 3

Number Districts with Technology Standards for Faculty/Staff, by Employee Type, 2003-2006
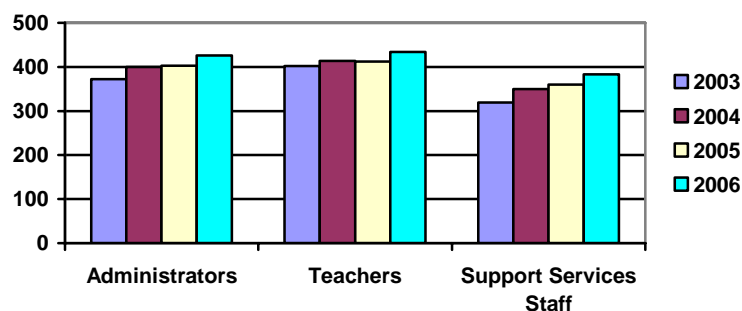
HARDWARE AND SUPPORT

Technology integration is affected by the kinds of hardware and software that districts deploy. The district COT looks at who is responsible for technology hardware and support in the district, the administrative technologies in place in the district, and computer networking. Access to current technologies is an essential condition for district operations as well as for teaching and learning. Technology is essential to effective and efficient district administration, data management, and communications. Having district technology staff to help plan, purchase, install, and support district technologies is key.

Item 3 – District technology staff

Item three asked districts to estimate the total number of district-level, full-time equivalent (FTE) staff responsible for technical maintenance and support. Overall, districts report having an average of 2.2 technical staff, which is only slightly higher than the 2.1 reported in 2005. The typical (median) district has only one full-time staff. In 2006, 31 districts report having no staff dedicated to overseeing district hardware and support.

Item 4 – District-supported administrative systems

Added in 2004, item four examines district administrative systems – programs that are used to expedite the storage and use of data and information. Table 4 details the systems supported by a majority of the districts. Almost all districts (517) have accounting systems, and over 93 percent of districts support automated student attendance, electronic mail (email), and library catalog. Systems supported by less than half of the districts include school safety (123 districts), teacher evaluation (166 districts), instructional management (149 districts), human resources (184 districts), extracurricular scheduling (211 districts), and distance education (212 districts), although all those systems showed slight growth in 2005-06.

Table 4

District Administrative Systems, 2004, 2005 and 2006

| | Number of Districts | | |
System Type	2004	2005	2006
Accounting/budgeting/payroll	511	513	517
Student attendance	461	488	498
Communication/email	452	478	489
Food service	431	420	451
Library catalog	432	475	491
Discipline	355	402	420
Health service	346	374	402
IEP management	345	382	401
Student performance	304	341	365

Item 5 – District networks

The use of an interconnected system of computers and peripheral equipment enables connected users to communicate and share information and resources. Revised in 2005, item five assumes that districts have computer networks and asks how many districts have all buildings in the district connected through a wide (WAN) or local area (LAN) network. In 2005, nearly nine of ten (87 percent) districts reported all buildings being connected through a wide or local area network. In 2006, over nine of ten (92 percent) districts report all buildings being connected through a wide or local area network.

TECHNOLOGY USAGE

Previous items examined technology readiness, with integrating technology as the goal of making technology available and accessible. Technology usage items look at technology integration, the incorporation of technology resources and technology-based practices into daily routine – of districts, school employees, teachers, and students. At the district level, technology usage items check to see how districts support a culture that embraces technology and accepts technology as natural to the business of everyday work. Major goals of the Title II.D Program call for all districts to have technology integrated into core curricula and for students to be technology literate by the end of the eighth grade.

Item 6 – Curriculum integration

Technology integration in Missouri is defined as "written curriculum that incorporates content and processes (teaching, professional development, and assessment) related to technology resources, equity of resources, research and workplace readiness skills. Technology supports overall goals and objectives and makes possible and enhances the use of multiple instructional resources and teaching strategies (e.g., use of project-based learning, collaborative and cooperative learning, ongoing questioning, expert assistance, and critical analysis)." As depicted in Figure 5, data report technology is integrated in communication arts for 512 districts (98 percent), in science for 494 districts (94 percent), in social studies in 483 districts (92 percent), and in mathematics for 481 districts (92 percent) in 2006.

Figure 5

Percent Districts with Technology Integrated in Curriculum, by Subject, 2003-2006
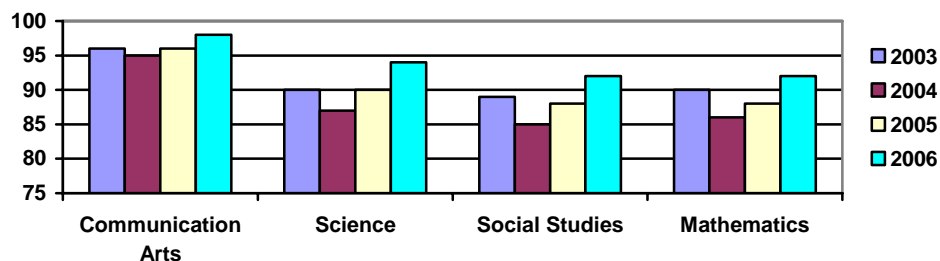
In 2004, the state upgraded the definitions and/or standards related to technology integration, student technology literacy, and teacher technology integration skills in order to better align with national standards (NETS). The dip noted in 2004 of the percentages of districts reporting to have technology integrated in the core curriculum areas is a reflection of the revised definition for integration. The increases for 2005 and 2006, therefore, indicate more than just modest improvement.

Item 7– District-provided email

Districts, for item 7, indicate the percentage of employees (by type) and students (by grade-level spans) who are provided email accounts. Table 6 shows that nearly all (97 percent) districts provide email accounts to employees, but less than one-fourth of districts provide accounts to students. Districts that do provide staff email accounts, however, typically provide accounts for all administrators, teachers, and support staff.

Table 6

District Email Accounts, 2003-2006

Population	2003	2004	2005	2006
District Employees				
• School administrators	504	515	502	508
• Teachers	499	510	495	498
• Support services staff	477	494	472	482
Students				
• Pre K-2	31	22	13	9
• 3-5	58	51	33	31
• 6-8	81	72	51	54
• 9-12	108	125	108	111

Item 8 – Technology literacy
In 1997, COT began asking districts to estimate the percentage of sixth-grade students who are computer literate, a goal set forth by Governor Mel Carnahan in January of 1997. In 2004, the item was revised to address "technology literacy" rather than "basic computer skills" and revised again in 2005 to address eighth-grade students. These revisions better align the COT item with the Title II.D technology literacy goal.

In 2005 and 2006, the typical (median) district reports 90 percent of eighth-grade students as meeting the technology literacy standard as established by the state. Aligned to the NETS for students, a literate student is able to "apply strategies for identifying and solving routine hardware and software problems that occur during everyday use; exhibit legal and ethical behaviors when using information and technology; use content-specific tools, software, and simulations to support learning and research; design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts, and select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems."

TECHNOLOGY FUNDING
Districts are asked about their technology funding habits to study budget trends with regards to how much districts spend on technology and how districts make use of the national E-rate program.

Item 9 – Technology budgets
Revised in 2005, this item simply asks for the total amount budgeted for technology for the current year. As noted in Table 7, districts estimated spending a total of over $110 million during the 2005-2006 school year. The 2006 total finally exceeds the nearly $108 million budgeted in 2003. While the average per district is $211,980 in 2006, that amount is inflated by the number of larger schools with access to greater resources. The typical (median) district budgeted $50,000.

Table 7

District Technology Budgets and Expenditures, 2002-2006

Technology Budget Items (in millions)	02-03	03-04	04-05	05-06
Hardware/Equipment	$45.057	$37.188	NA	NA
Instructional Software	12.784	5.077	NA	NA
Administrative Software	5.486	6.609	NA	NA
Professional Development	7.902	7.438	NA	NA
Connectivity-Distance Learning	5.456	5.473	NA	NA
Technical Support	17.974	17.423	NA	NA
Infrastructure/Retrofitting/Other	13.334	11.360	NA	NA
Total	$107.993	$90.569	$105.861	$110.929

Items 10 and 11 – E-rate discounts
Item 10 asked districts if they participated in the Universal Service Fund's E-rate program for 2005-2006 and the estimated amount of discounts/savings, while item 11 asked what percent of the discount received by the E-rate program is used to support education technology activities and expenditures. While MOREnet files an E-rate application on behalf of the 510-plus districts and state schools that participate in the statewide network project (TNP), items 10 and 11 refer to district-filed applications for E-rate discounts.

In 2006, 404 districts (77 percent) report applying for E-rate discounts and receiving funding commitment decision letters (FCDLs) that total just over $25.3 million. These figures compare to 414 districts (79 percent) in 2005 with discounts totaling nearly $29.7 million, 381 districts (73 percent) in 2004 with discounts totaling $32.55 million, and 374 districts (71 percent) in 2003 with discounts totaling over $41 million.

Districts projected that 97 percent of the savings were used to support technology-related activities and expenditures, compared to 80 percent in 2005, 74 percent in 2004, and 61 percent in 2003.

B. School Building Census

This section of the *2006 Census of Technology Report* analyzes data from 2,229 buildings, compared to 2,211 buildings in 2005, 2,207 buildings in 2004 and 2,250 buildings in 2003. While all buildings in the state complete the School Building Census Form, the report only covers those buildings with regular student populations. Data from juvenile centers, special education cooperatives, and other buildings (such as a gifted center) where attendance is reported at another building are not included in this report.

The school census is comprised of 18 items that are aligned to the Missouri State Education Technology Strategic Plan (METSP) and its five technology focus areas. Items examine access and distribution of the building's technology resources, technical support, teacher and student technical skills, and the routine uses of technology by user and technology type or function. A copy of the survey with aggregated data is provided as Appendix A, and Appendix B provides a cross reference of the 2006 COT items and METSP goals and objectives.

Overall, the 2006 data indicate some continued improvements in the kinds and numbers of technologies that can be accessed in Missouri's school attendance centers as well as in the ways school administrators, teachers, and students are using those technology resources. A good number of the gains are modest, at best, and likely a result of the tight budget year as explained earlier in this report. Some of the differences (or the magnitude of differences) noted in data from 2003 to 2006 can likely be attributed to the setting of higher standards (i.e., the changes in definitions for technology literacy and full integration) as described earlier, and to the change in reporting only buildings with regular student attendance. This is not to say there are not areas that show more noteworthy increases.

TECHNOLOGY PLANNING
As with the district COT, the building census examines the presence of a long-range technology plan. A school building plan, like a district plan, should provide a road map to help the school implement strategies that promote the district's mission, advance district and building improvement plans, and improve the teaching and learning occurring in the building.

Item 1 – Building technology plans
Building contacts are asked if buildings have technology plans and, if so, whether they are stand-alone plans and/or are embedded in district plans. Table 8 indicates the percentage of school buildings that have technology plans, the percentage of building plans that serve as stand-alone plans, and the percentage of plans that are included in district plans. Data show a continued trend in buildings having technology plans, starting with only 69 percent of buildings having plans in 1998 to 99 percent having plans in 2006.

Table 8

Status of Building Technology Plans, 1998-2006

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Building has a technology plan	69%	83%	83%	83%	83%	95%	97%	98%	99%
Plan is part of the district technology plan	64%	96%	96%	96%	96%	88%	89%	92%	91%
Building has a stand-alone plan	NA	NA	NA	NA	NA	6%	7%	6%	7%

TECHNOLOGY PROFESSIONAL DEVELOPMENT
The use of technology in the school setting requires professional development aimed at helping educators integrate the appropriate education technologies into curriculum content, instructional teaching strategies, and the day-to-day business of teaching and learning. Teachers, administrators, and school services staff need regular, ongoing, and quality professional development that helps them gain the confidence and skills needed in using the school's technologies in ways that promote district and school improvement plans and align with Show-Me Standards, board-approved curriculum, and board-approved educational technology standards.

Item 2 – Technology skills of building staffs
Building contacts are asked to estimate the technology-related skill levels of principals, teachers, technology support staff, and support services staff. The skill level options are: Beginner – basic technical skills including applications such as word-processing, some stand-alone software, and some Internet usage (email); Intermediate – regular use of applications, software, and Internet resources for increased productivity and the use of applications including word-processor for student writing, research on the Internet, computer-generated presentations; and, Advanced – complete integration and mastery of the technology, using it effortlessly as a tool to accomplish a variety of learning, instructional, and/or management tools.

Since 1998, the percentages of staffs with beginner skills have decreased steadily while the percentages with advanced skills have increased. The proportion of teachers estimated as beginner technology users has decreased from 40 percent reported in 1999 to 19 percent reported in 2004 and 2005 and then 18 percent in 2006. The rate of administrators (e.g., principals) estimated as having beginner skills has decreased from 35 percent in 1999 to eight percent in 2004 and 2006 (slightly lower than the nine percent reported for 2005).

Figure 9 illustrates the increase in the percentages of teachers, building administrators, and technology staff rated as having advanced technology skills from 1998 through 2006. (Note that the support services staff category was not included until 2003 and is addressed later.) The rates of teachers reported as advanced users has doubled from 11 to 22 percent. The group with the highest rate of advanced skills includes technology support staff at 83 percent in 2006, as compared to 54 percent in 1998.

Figure 9

**Percent Faculty/Staff with Advanced Skills, 1998-2006**
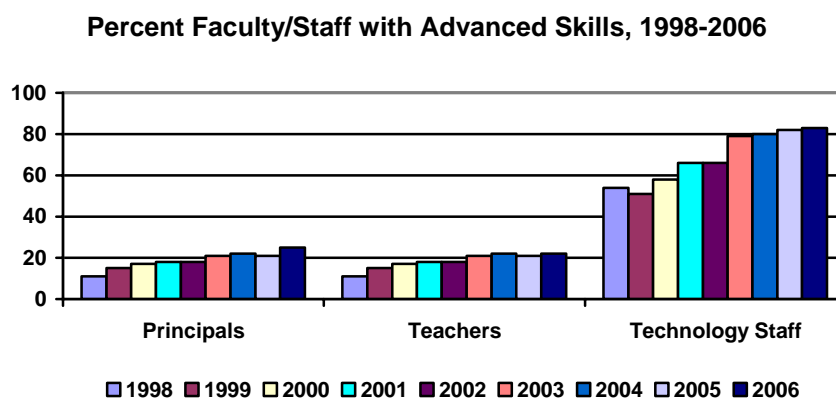
As mentioned above, the Census did not address skill levels of support services staff until 2003. Interestingly, these data have been relatively stagnant, with 51 to 52 percent of support services staff rated as having intermediate skills in 2003, 2004, 2005, and 2006. Also, the percentages of

staff rated as beginner or advanced have fluctuated little, ranging from 29 to 31 percent as beginners and 17 to 18 percent as advanced. The differences are somewhat less marked among the user groups when reporting on combined intermediate and advanced skills, as indicated in Figure 10. Almost all of the technology staffs (98 percent) have intermediate or better skills. Principals are close behind at 92 percent, followed by teachers at 82 percent, and support services staff at 69 percent.

Figure 10

Percent Faculty/Staff with Intermediate or Advanced Skills, 1998-2006
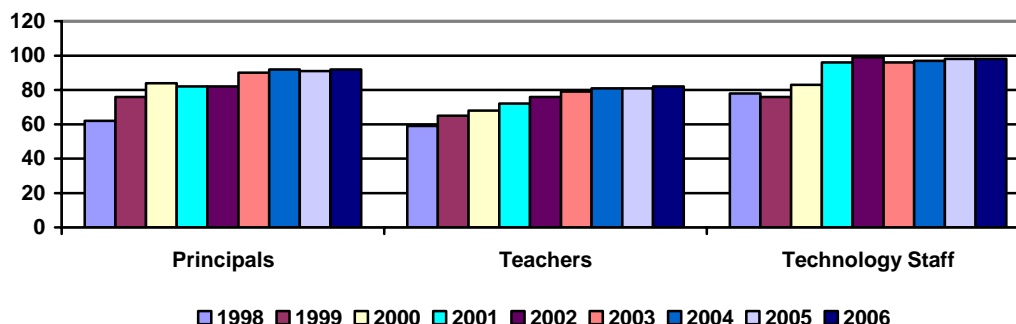
Item 3 – Number of teachers participating in education technology related professional development (including eMINTS)
Item 3, added in 2006, asks schools to report by range of hours, the number of teachers receiving education technology-related professional development. Districts were asked to include teachers participating in any of the eMINTS professional development programs. Data show 77 percent of the buildings reported 61 percent of their teachers had received 0 to 15 hours of education technology-related professional development from any source. At the other end of the range, 28 percent of the buildings reported 7 percent of their teachers had completed more than 30 hours of education technology-related professional development. On average only 1.51 teachers receive over 30 hours of education technology-related professional development. Table 11 reports this data.

Table 11
Number of Teachers In School Building Participating In
Education Technology-Related Professional Development (including eMINTS)

	# of buildings	% of total buildings	# of teachers	% of total teachers
Completed less than 15 hours	1,717	77	35,652	61
Completed 15 to 30 hours	870	39	8,557	14
Completed more than 30 hours	622	28	3,368	6
Total	2,229		47,577	

Item 4 – Number of eMINTS-trained teachers
Added in 2004, item four asked schools to report the number of teachers in the building who have completed one or both years of eMINTS professional development. The *enhancing* Missouri's Instructional Networked Teaching Strategies (eMINTS) program – that serves as the state's instructional model of technology integration – supports teachers as they learn to integrate multimedia technology into inquiry-based, student-centered, interdisciplinary collaborative teaching practices that result in improved student performance, increased parent

involvement, and enriched instructional effectiveness. While the majority of eMINTS-trained teachers received their professional development from eMINTS instructional staff, more and more teachers are receiving their professional development through district staff that has completed the eMINTS program's "train-the-trainer" professional development. The item was revised in 2006 to provide specificity about the numbers of teachers being trained in a variety of Professional Development programs offered by eMINTS.

In 2004, contacts reported having 594 teachers with one or both years of eMINTS professional development. For 2005, these numbers increased to 1,071 teachers. In 2006, data reports 1,660 teachers involved in some type of eMINTS training. Figure 12 indicates the numbers of staff reported in 2004 and 2005 and 2006 as having completed one or both years of the eMINTS professional development for teachers.

Figure 12

Numbers of eMINTS-Trained Teachers, By Number of Years of Training, 2004 - 2006
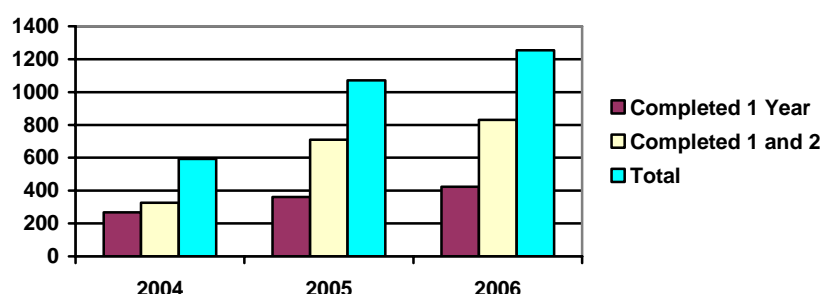
For the 2006 census, districts were also asked to report the number of individuals being trained in the eMINTS for Education Technology Specialists program and other two-year eMINTS professional development programs such as eMINTS4All, eMINTS4Administrators. Table 13 reports these numbers.

Although the numbers continue to climb, the percentage of teachers trained to total number of teachers continues to show a wide gap.

Table 13

Number of eMINTS-Trained Teachers, By Number of Years of Training and Program, 2006

	Completed Year 1 only		Completed both Year 1 and 2		Total Teachers
	Teachers	Buildings	Teachers	Buildings	Teachers
Comprehensive eMINTS for Teachers	423	162	831	297	1254
eMINTS for Education Technology Specialists	71	31	82	57	153
Other two-year eMINTS staff development programs	179	43	74	30	253

HARDWARE AND SUPPORT
Hardware and support items deal with technology access and support issues at the building level. These items cover the level of technical support, and the numbers of computers by type and location (and student per computer ratios).

Item 5 – Building technical support

Building contacts were asked in item five to estimate the total of school staff or others directly responsible for technical maintenance and/or support of the building's hardware. Table 14 indicates the number and percentage of buildings, and where appropriate the full-time equivalency (FTE), relying on the various types of technical support provider. In general, buildings engage employees rather than non-employees to provide such support. In 2006, all but 108 buildings (five percent) reported relying on employees. In total, buildings reported an average of 1.89 FTE employees providing technical support. However, the typical (median) building has closer to one employee responsible for support.

Table 14

Building Technical Support – 2006

Employees			Non-Employees		
1778	80%	District staff	208	9%	Students
696	31%	School certificated staff	23	1%	Parents/community
594	27%	School non-certificated staff	596	27%	Vendors/contractors
108	5%	None	1465	66%	None

The 2006 technical support data correspond closely with data collected in 2003, 2004, and 2005, as shown in Table 15. Following building-level technical support being provided by district-level staff, the next likely providers of support are certificated staff, vendors, and/or non-certificated staff. While few buildings rely on parent/community support, the percent of buildings making use of student assistance has decreased to nine following an increase from five in 2004 to 13 in 2005.

Table 15

Building Technical Support Providers, 2003-2006

	Buildings Responding			
Technical Support Provider	2003	2004	2005	2006
District staff	50%	78%	79%	80%
School certificated staff	26%	36%	31%	31%
School non-certificated staff	19%	21%	24%	27%
Vendor/Contractor	18%	18%	32%	27%
Students	5%	9%	13%	9%
Parents/Community	2%	2%	2%	1%

Items 6 and 7 – Computers in the building

Annually, buildings report on the types and locations of computers in the buildings. Item six counts computers by platform and speed capacity, and item seven counts Internet-connected and multimedia-equipped computers. Locations include Computer Labs, specifically designated for computer work; Instructional Rooms, designated as classrooms; and Library/Media Centers, designated for library and media services. In 2005, the Instructional Rooms were further broken out, by the grade spans of PreK-2, 3-5, 6-8, 9-12, and area career center. The handheld computer was also added to item five in 2005.

As indicated in Table 16, buildings reported 328,058 computers in 2006 – a ten percent increase from the 299,113 building computers reported in 2005. 81 percent of the computers are PC or PC-compatible, 92 percent are connected to the Internet, 88 percent can operate

multimedia programs, and 98 percent are considered Internet-capable. In 2005, the standard for being considered Internet-capable (or modern and able to run the Internet at high speeds) was updated to include: PC computers that run at Pentium or Pentium-equivalent speeds, Power Mac or G series Apple Computers, and AMD computers at or above 450 MHz.

Table 16

Numbers, Types, and Location of Computers, 1998-2006

	1999	2000	2001	2002	2003	2004	2005	2006
Total number of computers	176,148	206,864	237,115	232,808	270,368	273,636	299,113	328,058
• Desktop/laptop computers	176,148	206,864	237,115	232,808	270,368	273,636	288,926	315,485
• Handheld computers	NA	NA	NA	NA	NA	NA	10,187	12,575
Of Desktop/laptop computers…								
Located in instructional rooms	158,908	187,298	219,188	211,382	242,981	257,347	270,342	294,319
• Percent of all computers	90%	91%	92%	91%	90%	94%	93.4%	93%
Located in Classrooms	83,238	101,278	119,450	116,832	138,672	151,962	160,797	174,056
• Percent of all computers	47%	49%	50%	50%	51%	56%	56%	55%
• Percent-instructional rooms	52%	54%	54%	55%	57%	59%	59%	59%
Located in Computer Labs	60,815	69,319	81,057	77,373	83,897	84,162	87,260	96,313
• Percent of all computers	35%	34%	34%	33%	31%	31%	30%	31%
• Percent-instructional rooms	41%	37%	37%	37%	35%	33%	32%	33%
PC/PC-compatible	120,888	148,473	177,916	185,901	221,285	228,784	245,654	268,887
• Percent of all computers	69%	72%	75%	80%	82%	84%	85%	85%
Internet-capable	136,165	173,774	195,826	226,127	254,908	265,591	270,609	260,607
• Percent of all computers	77%	84%	83%	97%	94%	97%	94%	83%
Multimedia Equipped	91,354	131,490	170,807	190,353	211,124	234,377	247,305	289,547
• Percent of all computers	52%	64%	72%	82%	78%	86%	86%	92%
Internet Connected	105,872	145,221	179,509	205,068	222,522	244,976	261,932	303,400
• Percent of all computers	60%	70%	76%	88%	82%	90%	91%	96%
Handheld Computers	NA	NA	NA	NA	NA	NA	10,187	12,575
• Percent of all computers	NA	NA	NA	NA	NA	NA	3%	4%

Approximately 93 percent of all computers are located in instructional rooms (computer labs, classrooms, and library media centers). Overall, the 2006 data indicate little increase in all categories of computers.

The 2006 data indicate the shift in the location of computers has slowed. Since 1999, the range of computers located in a lab setting remains in the 30 percent range with a high of 36 percent in 1998. The percentage of computers residing in classrooms increased from 47 percent in 1999 to 56 percent in 2004 and remains at that level in 2005 and 2006. The shift is more noticeable when looking at the placement rates of computers within the instructional settings. In 2006, only 32 percent of "instructional" computers were located in labs as compared to 41 percent in 1999. The percent of "instructional" computers in classrooms has grown from 52 percent in 1999 to 60 percent in 2006.

Handheld computers have begun to appear in school districts. In 2006, districts report 899 handhelds in lab situations, 1,155 in PK-2 classrooms, 3,912 in grades 3-5, 2,222 in grades 6-8 and 2,375 in grades 9-12. Area Career Centers report 195 handhelds and LMCs report 290, while 1,527 are being used by administration. Table 17 shows the number of handhelds reported for 2005 and 2006 and their locations.

Table 17

Location and Number of Handheld Computers 2005 and 2006

	2005	2006
Computer labs	565	899
PreK-2	814	1,155
3-5	3,249	3,912
6-8	1,955	2,222
9-12	2,082	2,375
ACC	111	195
LMC	179	290
Admin Offices	1,232	1,527
Total	10,187	12,575

Item 7 – Computer Internet connections
For the third year, building contacts were asked to indicate the status of Internet connectivity by type of computer (desktop or laptop) and type of connection (wired or wireless). In 2004, 2005, and 2006 nearly all desktop computers (98 percent) had wired connections to the Internet. In 2006, three of four laptops had wireless connectivity.

Figures 18, 19, and 20 indicate the numbers of students per computer for 1998 through 2006. Ratios are determined using the COT data regarding numbers and types of computers and Core Data fall enrollment figures. As schools purchase new computers, older computers may be relocated within or surplussed out of the district. The numbers of computers in use continue to climb, resulting in a steady decline in the numbers of students per computers. Ratios are declining related to the number of students per high-speed (Internet-capable) computer and Internet-connected computer. The greatest decline relates to Internet-connected computers, as more and more buildings, classrooms, and computers are being connected to the Internet. Overall, the number of students per all computers has dropped from 6.4 in 1998 to 2.74 in 2006; the number of students per Internet-capable computer has dropped from 8.3 to 3.4 and, the number of students per Internet-connected computer has dropped from 13.5 to 2.96.
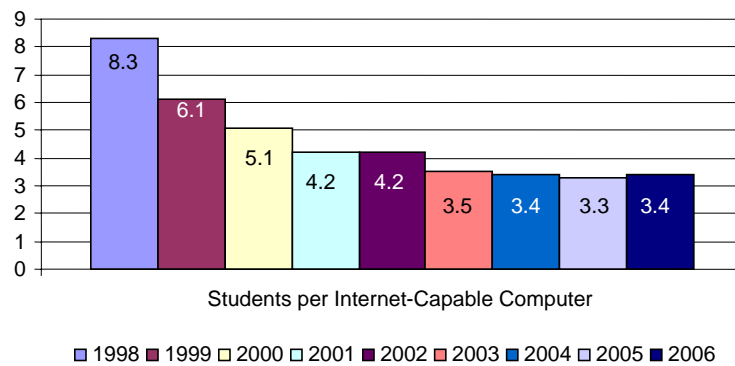
Figure 18

**Number of Students per Computer Type, 1998-2006**

Students per Computer

☐ 1998 ■ 1999 ☐ 2000 ☐ 2001 ■ 2002 ■ 2003 ■ 2004 ☐ 2005 ■ 2006
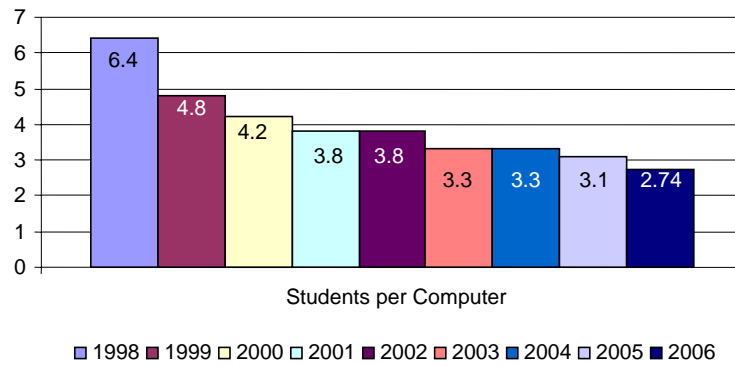
Figure 19

Number of Students per Internet-Capable Computer, 1998-2006

Students per Internet-Capable Computer

☐ 1998 ■ 1999 ☐ 2000 ☐ 2001 ■ 2002 ■ 2003 ■ 2004 ☐ 2005 ■ 2006

Figure 20

Number of Students per Internet-Connected Computer, 1998-2006

Students per Internet-Connected Computer

☐ 1998 ■ 1999 ☐ 2000 ☐ 2001 ■ 2002 ■ 2003 ■ 2004 ☐ 2005 ■ 2006
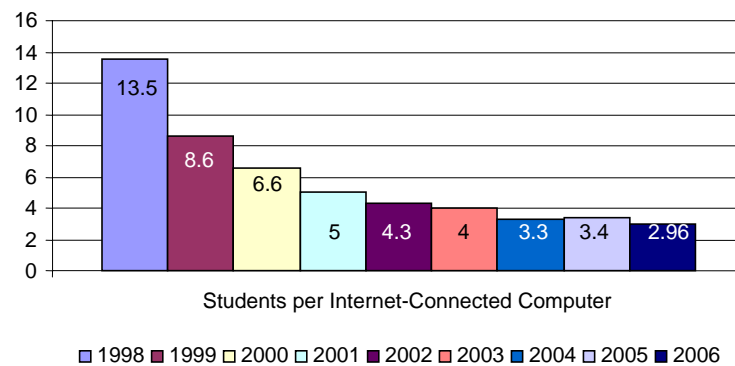
<u>Item 8 – Technology in instructional rooms</u>

Annually, buildings are asked to report on a list of technologies the state believes should be available in instructional rooms, based on current research and the eMINTS instructional model. These resources include telephone access, multimedia-equipped and Internet-connected computers, and teacher workstations that include a dedicated projection device (LCD panel or other type of video projector) and access to a printer.

Note that a technical problem made it impossible to report 2005 data. Tables 21 through 24 provide snapshots of the technologies located specifically in computer labs, instructional rooms, and library media centers (LMCs) for the base year of 1999, and 2002, 2003, 2004 and 2006. Overall, modest gains were noted in the majority of the technology categories. Note that the item about Internet access was changed in 2004 to indicate real access rather than "wired for" access, thus the expected drop in 2004.

In general, computer labs, LMCs and classrooms are on the verge of having the same access to education technologies, except for phones and the last category, complete teacher workstations. For example, 84 percent of LMCs had phone access in 2006, compared to 58 percent of labs and 56 percent of classrooms. However, 98 percent of labs, and LMCs and 97 percent of classrooms have internet access, 95 percent of labs, 93 percent of LMCs, and 91 percent of classrooms have a multimedia equipped computer, and 93 percent of the labs, 91 percent of LMCs, and 90 percent of classrooms have internet-connected computers. The lowest rates of access for all room types, not surprisingly, involve having the full suite of technology available.

Table 21

Computer Lab, LMC and Classroom Technologies, 2006

	Labs	LMC	Classroom
Total number of rooms	4,305	2,164	56,558
Number with telephone access	2,516	1,822	33,771
Number with Internet access	4,230	2,117	55,536
Number with multimedia-equipped computer	4,096	2,023	52,361
Number with Internet-connected computer	4,017	1,968	51,356
Number with complete teacher workstation	2,560	959	16,677

Table 22

Computer Lab Technologies, 1999 and 2002 – 2006*

Computer Labs	1999	2002	2003	2004	2006
Total	2,824	3,303	3,723	3,747	4,305
Percent with telephone access	NA	61%	63%	63%	58%
Percent with Internet access	86%	96%	98%	92%	98%
Percent with multimedia-equipped computer	77%	91%	93%	92%	95%
Percent with Internet-connected computer	72%	86%	91%	93%	93%
Percent with complete teacher workstation	43%	43%	52%	58%	59%

* Note: 2005 Data not available

Data for the computer labs changed very little from 2002 to 2004, with the 2004 data almost identical to the 2003 data. However, in 2006, data indicates an increase in the overall number of labs, with a 6 percent increase noted in the numbers of labs with internet access, a 3 percent increase in labs equipped with multimedia-equipped computers and a 1 percent increase in the number of labs with complete teacher workstations.

Table 23

Instructional Room Technologies, 1999 and 2002-2006*

Instructional Rooms	1999	2002	2003	2004	2006
Total	49,936	55,142	60,248	60,856	57,198
Percent with telephone access	NA	49%	55%	56%	60%
Percent with Internet access	74%	96%	96%	92%	98%
Percent with multimedia-equipped computer	52%	85%	88%	89%	93%
Percent with Internet-connected computer	46%	79%	85%	88%	90%
Percent with complete teacher workstation	13%	18%	21%	24%	30%

* Note: 2005 Data not available

Classroom technology has improved substantially over the years. Progress continued in 2006, with gains noted for every category. Many of the gains show most classrooms are equipped with internet access and a computer capable of utilizing that access, noteworthy given the state's decrease in funding. However, whether or not that access is available to students or just on the teacher computer is not shown. Over half of the classroom teachers have telephone access in 2006, and only about one in three has access to the full suite of classroom technologies.

Table 24

Library Media Center Technologies, 1999 and 2002-2006*

Library Media Centers	1999	2002	2003	2004	2006
Total	2,025	2,148	2,319	2,237	2,164
Percent with telephone access	NA	85%	88%	87%	84%
Percent with Internet access	75%	93%	98%	89%	98%
Percent with multimedia-equipped computer	75%	88%	90%	90%	93%
Percent with Internet-connected computer	68%	84%	89%	90%	91%
Percent with complete teacher workstation	32%	27%	37%	43%	44%

* Note: 2005 Data not available

Data have remained fairly constant for the LMCs during the past years. However, in 2006, the number of libraries with Internet-connected computers rose 9%. For the second year, LMC telephone access has decreased, however LMCs still indicate having telephone access at rates higher than those reported for computer labs and instructional rooms.

In 2006, the question about automated systems in place in building library media centers (LMCs). was deleted from the Census of Technology. The information collected, which specific brand of automation system was in place, was utilized by the State Library to study automation systems in schools. The study has been completed.

Items 9 and 10 – Technical maintenance and repair

First addressed in 2003, item nine asked the length of time needed for technical problems or repairs to be resolved. Buildings report in 2006 that it typically takes two-to-three working days to resolve minor or routine technical problems or repairs – the same length of time reported in 2003, 2004, and 2005.

INTERNET CONNECTIVITY / DISTANCE LEARNING
This section of the COT deals with building networking, Internet, and interconnectivity issues. Items address the systems in place that facilitate quality, secure, and safe access to people and information both in and outside the school building.

<u>Item 11 – Internet bandwidth</u>

Table 25 profiles Internet access data reported since 2002, with ever-increasing percentages of school buildings accessing the Internet through dedicated, direct means. In 2006, over 1,255 buildings report having a T1 (or split T1) line and 900 buildings report connectivity at higher speeds. Only four buildings report not having a direct connection to the Internet in 2006.

Table 25

Internet Access, 2001-2006

Number of buildings	2002	2003	2004	2005	2006
Total number of buildings	2,128	2,250	2,207	2,211	2,229
Percent with Internet access	97%	98%	99%	99%	99%

In 2005, item 11 was changed to also ask about the delivery mode. Figure 26 indicates the primary methods for accessing the Internet in 2006. Over 1,000 buildings (50 percent) have fiber connections, over 750 (35 percent) have copper line, over 200 (nine percent) use wireless/point-to-point/frame relay, and 68 (three percent) have digital subscription, or DSL. Of the remaining buildings, less than 1 percent (8) use some other mode of delivery (such as satellite), and 1 percent (33) report having no method for accessing the internet.

Figure 26

Internet Access Delivery Modes - 2006
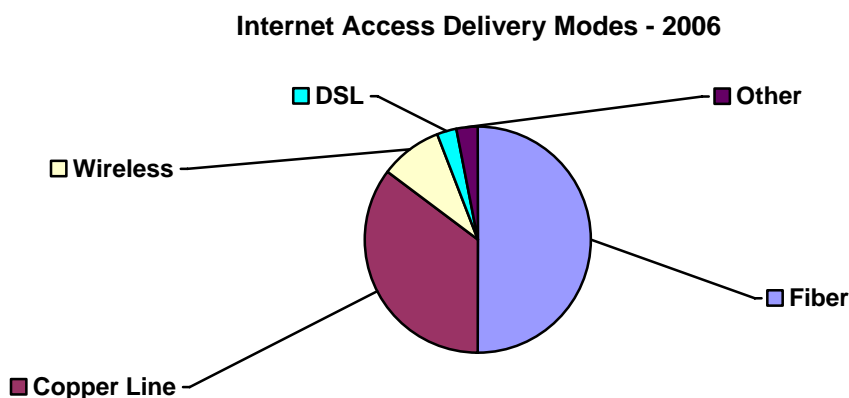
<u>Item 12 – Computer networking</u>

Originally, this item had two parts – about the percentage of computers in the building that are connected through a local or wide area network, and whether the building was connected to the district LAN or WAN. This item was revised in 2005 to deal only with computer networking. The part of the item that asked about building connectivity was moved to the District Census.

Table 27 shows an increase in the numbers of computers connected to a building (or district) network, from 88 percent of computers in 2003 to 100 percent presently. In 2006, the typical (median) building has all computers networked.

Table 27

Computer Networking, 2003-2006

	2003	2004	2005	2006
Percent computers connected to building LAN (or district WAN)	88%	94%	96%	100%

Item 13 – Distance learning systems

For several years, a distance learning item addressed accessibility to programming that is originated from outside of the building. The item was revised in 2005 to better define and distinguish among five options: Cable television and Satellite programming that incorporates one-way instructional video; Interactive television (or I-TV) and Desktop video-conferencing that provides two-way audio and video instruction; and Web-based online instruction that is Internet-based and non-interactive.

In 2006, three of four buildings report having at least one distance learning system available. This compares to four of five buildings in 2004, which can likely be explained by the change in options and the more formalized definitions of the options. With regards to systems in place, Table 28 shows the most commonly used system since 2002 is cable television. In the past four years, more and more buildings have access to Web/Internet-based and interactive television instruction.

Table 28

Distance Learning Systems, 2002-2006

Distance Learning Systems	2002	2003	2004	2005	2006
Cable television (one-way video)	285	1,371	1,276	1,140	1,191
Satellite programming (one-way video)	163	642	518	399	405
Interactive television (two-way interactive)	239	390	379	485	434
Desktop/IP-based videoconferencing*	205	1,107	893	270	265
Web-based, online instruction (non-interactive)	NA	NA	NA	703	807
None	NA	180	439	551	510

* Note: IP-based instruction was divided into two categories in 2005

TECHNOLOGY USAGE

The remaining building items address how building faculty, staff, and students use the education technologies available to them in school. Emphasis is placed on "routine" use, described as being used or implemented at least three times per week. As explained earlier in this report, the Missouri School Improvement Program (MSIP) requires districts to report these and similar data. Likewise, the scoring guide used for state approval of district technology plans places more emphasis on usage data. Both of these accountability measures factor in the following analyses.

Item 14 – Routine use of technology, by technology type

This item has typically asked how principals, teachers, and students have used educational software, the Internet, and electronic resources. The item also helps track the impact of state and federal funding that promote the use of educational technologies. Besides supporting the state network, the state appropriates funding to the Secretary of State's Office / State Library for the purchase of electronic resources that are made available to all network users via their

MOREnet connection. In 2005, the item was revised to delineate electronic resources that include the following:

- EBSCOhost Electronic Journals Service – a gateway to thousands of journals containing millions of articles from hundreds of different publishers.
- Gale – numerous products focused on specific topics such as Authors or history.
- Newsbank – comprehensive database resource containing information from newspapers.
- ProQuest – a comprehensive digital database containing in-depth coverage of more than 7,400 publications and millions of complete articles.
- SIRS Researcher – a general reference database containing thousands of full-text articles exploring social, scientific, health, historic, business, economic, political, and global issues selected from 1,600 domestic and international publications according to strict criteria with regard to content relevance, reliability, and age appropriateness.

Table 29 reports on the use of these resources in public schools. That the statistics reported in the table are very low can likely be explained as not all buildings had access to each resource and not all populations would be expected to make regular use of each resource. Note that EBSCOhost and Newsbank are made available to districts via their participation in the state-supported MOREnet Technology Network Program (TNP). In 2006, 513 of the 524 districts, and the state schools for the blind and deaf, were TNP customers.

Overall, the data show a slight increase in usage of most services, but, as represented in Table 29, usage is still disappointing at best. It is apparent that the state needs to take some action. Steps might include information dissemination and the offering of workshops that explain what is available and how to access and make use of these resources in meaningful ways.

Table 29

Buildings Reporting Use of Electronic Resources, by User Type - 2006

Resource	Principals	Teachers	Students
EBSCO host	530	1370	1076
Electronic encyclopedia	476	1540	1475
Gale	138	404	334
Newsbank	192	525	427
ProQuest	73	242	50
SIRS	100	306	255

Item 15 – Routine technology use, by function

This item has typically asked building contacts to estimate the percentages of administrators (e.g., principals), teachers, and students that routinely use computers and computer technologies for specific functions. Tables 30 through 32 illustrate such technology usage for 1999 through 2006. While in some instances the 2006 responses are the highest ever reported, there are other instances of only modest increases and some categories that are still below expectations. Note that "routine use" was upgraded in 2004 to indicate three or more times per week.

Table 30 details routine technology use by school principals. Reflecting their responsibilities, these educators are more apt to use technology for research, writing, email, and student data manipulation than for curriculum and instruction. Over the years, the areas where principals show the greatest increase in usage include the use of technology to track student performance,

4 percent, manage student records, 3 percent, conduct research, 3 percent, assess student performance, 3 percent, and the production of media, web, or multimedia products or presentations for demonstration purposes, 3 percent. Smaller increases are shown in the areas of communicating electronically with peers, experts, or others and parents and students, 2 percent, followed by produce written products 1 percent. These technology areas are two of the most highly utilized functions, thus having little room for growth. Deliver/present instruction, participating in online coursework and preparing lesson plans, two functions not routinely expected of administrators, did not show any increase over 2005 data.

Table 30

Routine Use of Technology by Building Principals, 1999-2006

Technology Function	1999	2000	2001	2002	2003	2004	2005	2006
Produce media/presentation products	26%	29%	31%	43%	46%	50%	54%	57%
Produce written products	65%	68%	56%	67%	73%	77%	79%	80%
Conduct online research	57%	62%	58%	69%	79%	80%	78%	81%
Communicate with peers, experts, others	53%	58%	48%	63%	79%	87%	93%	95%
Communicate with parents and students	NA	NA	NA	NA	NA	NA	81%	83%
Prepare lesson plans	8%	9%	13%	14%	16%	15%	11%	11%
Manage student records	61%	66%	60%	71%	81%	83%	82%	85%
Track student performance	49%	54%	56%	67%	78%	81%	80%	84%
Assess student performance	NA	NA	NA	58%	67%	72%	71%	74%
Deliver/present instruction	13%	18%	21%	28%	37%	39%	37%	37%
Enroll in online coursework	NA	NA	NA	NA	4%	7%	11%	11%

Table 31 covers routine teacher use of technology. Eighty percent of teachers typically use technology for writing, 76 percent for research information collection and keeping track of student performance, 76 percent to help manage student records, and 72 percent to assess student performance. Technology usage has remained fairly stable for the past three years. Areas where teachers show the greatest increases in routine use from 2003 to 2006 include the use of technology to communicate with peers, experts and others (from 50 to 88 percent), manage student records (64 to 76 percent), assess student performance (64 to 72 percent), track student performance (69 to 77 percent), and deliver/present instruction (46 to 60 percent).

Table 31

Routine Use of Technology by Teachers, 1999-2006

Technology Function	1999	2000	2001	2002	2003	2004	2005	2006
Produce media/presentation products	20%	24%	29%	37%	43%	47%	48%	51%
Produce written products	62%	66%	60%	71%	77%	81%	79%	80%
Conduct online research	54%	59%	56%	67%	74%	75%	75%	76%
Communicate with peers, experts, others	NA	NA	NA	NA	50%	68%	85%	88%
Communicate with parents and students	41%	46%	39%	53%	62%	66%	72%	74%
Prepare lesson plans	42%	47%	45%	59%	64%	66%	66%	68%
Manage student records	40%	45%	46%	56%	64%	70%	73%	76%
Track student performance	47%	52%	48%	61%	69%	74%	75%	77%
Assess student performance	NA	NA	NA	55%	64%	69%	70%	72%
Deliver/present instruction	20%	26%	29%	38%	46%	51%	57%	60%
Enroll in online coursework	NA	NA	NA	NA	5%	9%	11%	12%

Table 32 depicts routine student use of technology. While students routinely use technology more than they did in 1999, their usage rates generally lag behind those noted for teachers and administrators. However, in two categories, produce written products and conduct online research include over half of students. Media presentations rose from 40 to 43 percent.

Although email to communicate with peers or experts rose from 20 to 21 percent, email to communicate with parents decreased from 13 to 12 percent. Use of technology to enroll in online coursework remained the same at 2 percent.

Table 32

Routine Use of Technology by Students, 1999-2006

Technology Function	1999	2000	2001	2002	2003	2004	2005	2006
Produce media/presentation products	18%	22%	23%	32%	37%	29%	40%	43%
Produce written products	58%	61%	52%	65%	68%	46%	59%	60%
Conduct online research	52%	57%	49%	59%	63%	NA	53%	56%
Communicate with peers, experts, others	NA	NA	NA	NA	NA	12%	20%	21%
Communicate with parents and students	NA	NA	NA	NA	NA	7%	13%	12%
Enroll in online coursework	NA	NA	NA	NA	NA	7%	2%	2%

Item 16 – Technology integration support

Table 33 indicates the positions available in, or available to, the school building for leadership in integrating technology into curriculum and instruction from 2003. Integration assistance is typically the charge of a district or building technology coordinator and/or administrator. With increases in the numbers of buildings reporting assistance from persons residing in the buildings – such as a library media specialist, instructional technology specialist, or teacher – schools should be in better position to respond to instructional support needs.

Table 33

School Leaders in Technology Integration, 2003-2006

	Percent Buildings Reporting			
Position Responsible for Providing Assistance	2003	2004	2005	2006
School building administrator	53%	57%	53%	54%
Technology coordinator (any)	49%	58%	NA	NA
• District technical staff	NA	NA	47%	54%
• School technical staff	NA	NA	20%	21%
Teacher(s)	46%	48%	52%	55%
Instructional technology specialist	24%	32%	34%	34%
Library media specialist	43%	54%	58%	60%

Item 17 – Teacher technology integration

Added in 2002, this item asked the building contact to estimate the percentage of teachers who fully integrate technology into curriculum and instruction. Based on the eMINTS instructional model, full integration is defined as the "ability to use instructional strategies that promote authentic project-based learning opportunities, student teamwork, collaboration and communication using technology in the classroom curriculum." Table 34 indicates that again in 2006, half of the teachers meet this standard, compared to 53 percent in 2004, 41 percent in 2003, and 33 percent in 2002.

Table 34

Percent Teachers Integrating Technology, 2002-2006

	2002	2003	2004	2005	2006
Teachers fully integrating technology	33%	41%	53%	50%	50%

Item 18 – Technology-mediated feedback systems

Another item added in 2002 to align with the state plan, this last item asked about technology-mediated feedback systems in place to help facilitate effective communication between schools and patrons, including students and parents. In 2006, all but 93 buildings indicate making use of some system, compared to 79 buildings in 2005 and 129 buildings in 2004. Table 35 indicates, as noted the previous three years, the most commonly used systems include email and voice mail. Note, however, that the use of the Web for communication tripled from 2004 to 2005 (from under 200 to over 600 buildings). In 2006, the use of the web for homework decreased by 48% from it's high in 2005, although email usage continues to climb.

Table 35

Percent Buildings with Technology-mediated Feedback Systems, 2002-2006

Feedback System	Number of Buildings				
	2002	2003	2004	2005	2006
Email	822	2,007	2,207	2,075	2136
Voice mail	546	1,053	1,037	1,115	1196
Listserv	28	354	300	287	360
Automated absentee calling system	179	296	283	416	471
Homework hotline via telephone	221	280	281	331	294
Homework hotline via Web	62	160	185	611	319

Appendix A

Missouri Census of Technology	District Level Census Form (2006)

Complete this census form to reflect district technology status as of **March 1**.
It is recommended that you make a copy of the completed census for your files.
Consult the Core Data Manual and Help file, call (573) 751-8247, or e-mail: instrtech@dese.mo.gov for assistance as needed.

N=524

1) Year district technology plan was last approved by DESE (prefilled from section files): 2003(277), 2004(74), 2005(61), 2006(111), 2007(1)

2) Board-approved education technology standards and population(s) that must meet the standards.

STANDARDS (Check ALL that apply)
439	84%	Locally-developed
185	35%	Adopted National Educational Technology Standards (ISTE)
51	9%	Adopted Standards for Technological Literacy: Content for the Study of Technology (ITEA)
25	5%	Other: 6=Show-Me Standards
40	7%	None

POPULATIONS (Check ALL that apply)

Students:
449	86%	PreK-2
464	89%	3-5
473	91%	6-8
403	77%	9-12
58	100%	Area career center (N=58)
41	8%	None

Staff:
426	81%	Administrators
434	83%	Teachers
383	73%	Support services staff
89	17%	None

3) Estimated total FTE of district-level staff directly responsible for technical maintenance and support of hardware.

EMPLOYEES (FTE)
	Total	Bldg.	Percent	Average	Median
District Technology Staff	1089.55	493	94%	2.21	1.0
None		31	6%		

NON-EMPLOYEES (Contracted Hours)
	Total	Bldg.	Percent	Average	Median
Vendor/contractor	31131.00	156	30%	199.56	55
None		368	70%		

4) District-supported administrative systems. (Check ALL that apply)

517	99%	Accounting/budgeting/payroll	431	82%	Grade book	498	95%	Student attendance
301	57%	Classroom website hosting	402	77%	Health Service	243	46%	Student fees
489	93%	Communication/email	184	35%	Human resources	365	70%	Student performance
388	74%	Course scheduling	401	77%	IEP management	166	32%	Teacher evaluations
420	80%	Discipline	149	28%	Instructional management	302	58%	Technical support
212	41%	Distance education	313	60%	Inventory	235	45%	Transportation
211	40%	Extra curricular scheduling	491	94%	Library catalog	0	0%	None
451	86%	Food Service	123	24%	School safety			

5) All buildings in district are connected through a wide or local area network 484 / 92% =Yes   40 / 8% =No

6) Core content area(s) in which technology is integrated. (Check ALL that apply)

512 / 98% =Communication Arts   481 / 92% =Mathematics   494 / 94% =Science   483 / 92% =Social Studies

7) Estimated percentage of following populations with district-provided email accounts.
[Number of districts, Percent of all districts, Median percentage rate of accounts for responding districts]

8) STUDENTS: STAFF:

9	2%	100%	PreK-2	508	97%	100%	Administrators
31	6%	85%	3-5	498	95%	100%	Teachers
54	10%	95%	6-8	482	92%	100%	Support Services Staff
111	21%	30%	9-12	16	3%	-	None
397	76%	-	None				

9) Estimated percentage of district 8th graders who are technologically literate. Median = 90%

10) Amount budgeted for technology for current year. [N = 524 with 10 districts reporting $0.00]
      Total = $110,929,735   Average = $211,980   Median = $50,000

11) Dollar value of district E-rate discount for current year (per funding commitment decision letters). [N = 404 districts]
      Total = $25,326,100   Average = $62,688   Median = $10,631

12) Estimated percentage of E-rate discount used to support education technology.   Median = 97%

Complete this census form to reflect school building technology status as of **March 1**.
It is recommended that you make a copy of the completed census for your files.
Consult the Core Data Manual and Help file, call (573) 751-8247, or e-mail: instrtech@dese.mo.gov for assistance as needed.

N = 2229

PLANNING

1) Type of school building technology plan: 164 / 7% Stand-alone plan   2026 / 91% Integrated in district plan   19 / 1% Do not have building plan

TRAINING

1) Estimated percentage of faculty/staff in school building at each skill level of technology use.

Faculty/Staff	Beginner		Intermediate		Advanced		Total	
	Total	%	Total	%	Total	%	Total	%
Administrator(s)	17512	8%	145389	67%	55260	25%	218161	100%
Teachers	39560	18%	130135	60%	48509	22%	218204	100%
Technology Support Staff	3384	2%	32028	15%	175090	83%	210502	100%
Support Services Staff	67399	31%	111038	51%	38546	18%	216983	100%

2) Number of teachers in school building participating in education technology-related professional development (including eMINTS).

	# of Buildings	# of Teachers	Average Per Building	Average All Buildings
Completed less than 15 hours	1717	35652	20.76	15.99
Completed 15 to 30 hours	870	8557	98.36	39.38
Completed more than 30 hours	622	3368	5.41	1.51
TOTAL	2229	47577	--------	21.34

a. Number of eMINTS-trained teachers in school building, by training type.

	None	Completed Year 1 Only		Completed both Year 1 & 2		Total Teachers
		Teachers	Buildings	Teachers	Buildings	Teachers
Comprehensive eMINTS for Teachers	1783 Buildings	423	162	831	297	1254
Comprehensive eMINTS for Education Technology Specialists	2003 Buildings	71	31	82	57	153
Other two-year eMINTS staff development programs	2016 Buildings	179	43	74	30	253

HARDWARE AND SUPPORT

1) Estimated total FTE of school building staff or total hours of others directly responsible for technical maintenance and/or support of hardware.

EMPLOYEES	Total	Bldg.	Percent	FTE	NON-EMPLOYEES	Total	Bldg.	Percent	Hours Worked
District staff	5770.24	1778	80%	3.25	Students	26857.14	208	9%	129.12
School certificated staff	929.94	696	31%	1.34	Parents/community members	490.25	23	1%	21.32
School non-certificated staff	637.61	594	27%	1.07	Vendors/contractors	40119.25	596	27%	67.31
None		108	5%		None		1465	66%	
[Overall Average: 1.89]					**[Overall Average: 72.58]**				

2) Computers by type and location within school building.

COMPUTER PLATFORM	COMPUTER LABS	PreK-2	INSTRUCTIONAL ROOMS 3-5	6-8	9-12	ACC	LIBRARY CENTERS	ADMIN. OFFICES	TOTAL
APPLE/MAC									
LC series and lower	692	713	486	124	119	24	121	16	2295
Power Mac series	558	713	552	429	312	64	153	56	2837
G3	6338	3486	3808	3510	2728	206	1711	692	22479
G4 or later	7600	1862	2702	1632	2509	321	1569	790	18985
Sub-Total	15188	6774	7548	5695	5668	615	3554	1554	46596

PC COMPATIBLE								
486 or earlier	201	345	365	176	317	30	147	81	1662
Pentium I or II	5118	3878	4257	3921	5431	527	2325	1270	26727
Pentium III	15099	5892	8063	7729	10666	1376	4268	3744	56837
Pentium IV or later	45218	10088	16454	12927	22917	3768	9800	11380	132552
Celeron	10364	3610	5277	4601	5479	634	2564	2040	34569
AMD (under 450 MHz)	4374	1017	1970	1130	2563	302	1020	916	13292
AMD (450+ MHz)	751	394	563	456	591	42	272	179	3248
Sub-Total	81125	25224	36949	30940	47964	6679	20396	19610	268887
Total Mac/PC	96313	31998	44497	36635	53632	7294	23950	21164	315483
HANDHELDS	899	1155	3912	2222	2375	195	290	1527	12575
TOTAL	97212	33153	48409	38857	56007	7489	24240	22691	328058

3) Number of Internet connected computers and multimedia equipped computers by location and type of connection.

Computer type and Connection type	Computer Labs	PreK-2	Instructional Rooms 3-5	6-8	9-12	ACC	Library/Media Centers	Admin. Offices	Total
MULTIMEDIA EQUIPPED	92477	28356	41014	32917	47293	5893	21829	19798	289547
INTERNET CONNECTED	93313	29029	43228	35760	51025	6532	23330	21183	303400
WIRED CONNECTION									
Desktop	80221	26105	36951	31916	45084	5561	19903	18103	263844
Laptop	1208	534	1084	707	1518	183	431	1369	7034
Handheld	93	308	490	323	106	18	15	192	1545
WIRELESS CONNECTION									
Desktop	1384	288	947	298	601	230	367	205	4320
Laptop	8821	924	2213	1948	2578	292	1973	706	19455
Handheld	148	36	270	229	342	12	125	436	1598

4) Technology by type and location within school building.

NUMBER OF ROOMS…	LABS	PreK-2	INSTRUCTIONAL ROOMS 3-5	6-8	9-12	ACC	LMCs	ADMIN.	TOTAL
total	4305	12877	12988	14200	17231	640	2164	10471	75793
• with telephone access	2516	7358	7344	7939	11130	486	1822	9938	49105
• with Internet access (wired or wireless)	4230	12567	12800	13285	16884	633	2117	10192	73698
• with one or more multimedia-equipped computers	4096	11997	12247	12182	15935	603	2023	9360	69284
• with one or more multimedia-equipped computers connected to Internet	4017	11784	11996	12052	15524	602	1968	9231	67965
• with one or more multimedia-equipped and Internet-connected computers and access to a printer, and a dedicated projection device	2560	3311	4556	3691	5119	244	959	1228	21889

5) Estimated typical (average) timeframe for resolving minor or routine technical problems/repairs.

801	36%	1 working day	227	10%	4-6 working days	37	2%	11 working days or more
1000	45%	2-3 working days	66	3%	7-10 working days			

6) Estimated percentage of computers in working order on a typical (average) day Median = 98%.

INTERNET CONNECTIVITY- DISTANCE LEARNING

1) School building Internet connection by bandwidth and delivery mode.

BANDWIDTH:

52	2%	56kb – 384 kb
1255	56%	385kb – 1.5mb (T1)
426	19%	1.6mb – 9.9mb
144	6%	10mb – 45mb
161	7%	45mb – 100mb
169	8%	>100mb
4	<1%	None

DELIVERY MODE:

778	35%	Copper line
1115	50%	Fiber
68	3%	DSL
8	<1%	Satellite
209	9%	Other:
33	1%	None

2) Estimated percentage of computers connected to school building LAN (or district WAN) Median = 100%

3) Distance learning system(s) available to students in school building. (Check ALL that apply)

434	19%	I-TV: two-way interactive (audio and video) television	111	5%	Other
265	12%	Desktop video conferencing: two-way interactive	510	23%	None
807	36%	Web-based online instruction via Internet: non-interactive			
405	18%	Satellite: one-way instructional video			
1191	53%	Cable TV: one-way instructional video			

TECHNOLOGY USAGE

1) Estimated percentage of administrators, teachers, and students routinely using following applications.

Application	Administrators		Teachers		Students	
Educational Software	99136	44%	170144	76%	177115	79%
Email	217164	97%	209550	94%	25576	11%
Electronic Resources:						
EBSCO host	34663	16%	50714	23%	48032	22%
Electronic encyclopedia	31771	14%	67815	30%	74923	34%
Gale	7569	3%	12390	6%	13589	6%
Newsbank	10711	5%	15655	7%	15187	7%
ProQuest	3692	2%	7091	3%	7304	3%
SIRS	4950	2%	8678	4%	10090	5%

2) Estimated percentage of administrators, teachers, and students routinely using computers for following functions.

Function	Administrators		Teachers		Students	
Produce media, web, or multimedia products to demonstrate learning, make presentations	126171	57%	114740	51%	95608	43%
Produce written or print products to demonstrate learning, make presentations	179432	80%	178729	80%	132875	60%
Communicate with peers, experts, others	211593	95%	195218	88%	46813	21%
Communicate with parents and students	184842	83%	164630	74%	27738	12%
Conduct online research	180598	81%	169465	76%	124128	56%
Participate in online courses (this year)	23900	11%	26592	12%	5128	2%
Manage student records (spreadsheet/database)	188529	85%	170165	76%	-	-
Track student performance	186657	84%	171114	77%	-	-
Assess student performance	165990	74%	159435	72%	-	-
Deliver and present instruction	82250	37%	133571	60%	-	-
Prepare lesson plan(s)	25021	11%	151627	68%	-	-

3) Estimated total FTE of staff or total hours of others directly responsible for integration of technology into curriculum and instruction.

EMPLOYEES	Total	Bldg.	Percent	FTE	NON-EMPLOYEES	Total	Bldg.	Percent	Hours Worked
Instructional tech. specialist	1108.85	767	34%	1.45	Students	4112	49	2%	83.92
Library/media specialist	2476.05	1348	60%	1.83	Regional center/RPDC	1909	97	4%	19.68
School administrator	2884.39	1205	54%	2.39	Other (specify)	3134	81	4%	39.69
Teacher	18427.70	1219	55%	15.12	None		1997	90%	
School technical staff	715.50	473	21%	1.51					
District technical staff	2189.33	1197	54%	1.83					
Other		222	10%						
None		108	5%						

[Overall Average FTE = 1.8] (4.02 including teacher)   [Overall Average = 47.43]

4) Estimated percentage of teaching staff fully integrating technology into curriculum and instruction. Median = 50%

5) School (or district) supported technology-mediated feedback. (Check ALL that apply)

471	21%	Automated absentee calling system	360	16%	Listservs
375	17%	Electronic bulletin board	1196	54%	Voice Mail
2136	96%	Email	543	24%	Other (specify):
319	14%	Homework hotline via web	51	2%	None
294	13%	Homework hotline via telephone			

Cross Reference of 2005 COT Items and 2002-2006 METSP Goals and Objectives,
by METSP Goal

METSP Goal and Objective	COT Item
1. Student Learning	
a. State Board endorses/adopts student technology standards	NA
b. Districts establish/endorse student technology standards	District 2
c. Students will be technologically literate by end of eighth grade	District 8
d. Students routinely use Web and educational software	Building 14
e. Students routinely use technology to conduct research and produce products	Building 15
f. Sample of eMINTS student will score satisfactory or above on the MAP reading test	NA
g. 5% fewer of eMINTS sample students will score in Step 1 or Progressing on the MAP annually	NA
h. eMINTS sample students in special categories will perform better, on average, on the MAP than non-eMINTS students	NA
i. High schools will provide courses via distance learning	NA
2. Teacher Preparation	
a. State Board establishes or endorses teacher technology standards	NA
b. Districts establish/endorse teacher technology standards	District 2
c. Districts integrate technology into the core curriculum areas	District 6
d. Teachers possess intermediate or advanced technology skills	Building 2
e. Teachers routinely use Web and educational software	Building 14
f. Teachers routinely use technology to conduct research, prepare lessons, assess and manage student data, produce presentations and deliver instruction	Building 15
g. Teachers fully integrate technology in curriculum and instruction	Building 17
h. Elementary buildings will have at least 2 eMINTS trained teachers	Building 4
3. Administration/Management	
a. State Board establishes or endorses administrator technology standards	NA
*Districts establish/endorse administrator technology standards <Added 2003>	District 2
b. Districts have state-approved technology plans, tied to CSIPs, address all TFAs, promote PD, and make use of E-rate	District 1, 10, 11
c. Districts partner with business / higher education to help with technology planning, implementation or evaluation	Deleted 2005
d. Building administrators possess intermediate or advanced technology skills	Building 2
e. Districts provide email accounts to administrators, teachers, and support staff	District 7 & 4
f. Building administrators routinely use Web and education software	Building 14 & 15
g. Principals routinely use technology for data management, assess and track student performance, communicate with others	Building 15
h. Buildings have technology- mediated feedback system(s)	Building 18
4. Equitable Access	
a. Districts maintain adequate LAN, connected to Internet	District 5
b. Buildings are connected to district LAN/WAN, connected to Internet, providing web and email services	District 5
c. Buildings have video conferencing and/or multimedia distribution system	Building 13
d. Classrooms are equipped with full teacher workstations and Internet-connected computers at 2:1 ratio of computers to students	Building 5, 6, 8
5. Technical Support	
a. Districts employ/contract technical staff	District 3
b. Buildings have on-site technical support (both technical and instructional)	Building 5, 16
*Buildings have technical problems/repairs fixed in 3 working days <added 2004>	Building 10,

Appendix B

Cross Reference of 2005 COT Items and METSP Goals and Objectives, by COT Item

District Census	METSP Goal
1. Year technology plan approved by state	3.a.
2. Board-approved education technology standards, by kind and population	1.b., 2.b.
3. District staff responsible for technical maintenance and support	5.a.
4. District-supported administrative systems	3.e.
5. District building(s) and administrative office(s) networking	4.b.
6. Core curriculum areas where technology is integrated	2.c.
7. District-provided email accounts, by user type and [student] grade levels	3.c.
8. Percent eighth-graders technologically literate	1.c.
9. Technology budget for current year	3.b.
10. E-rate discount amount for current year	3.b.
11. Percent E-rate discount budgeted back into education technology	3.b.

School Building Census	METSP Goal
Technology Planning	
1. Building technology plan status (stand-alone or part of district plan)	NA
Technology Professional Development	
2. Technology skill levels of building administrators, faculty, technical, and support staff	2.d., 3.d.
3. Number of teachers receiving education technology-related professional development (including eMINTS training)	2.a.-d.
4. Number eMINTS-trained teachers	2.h.
Hardware And Support	
5. Building-level staff responsible for technical maintenance	5.b.
6. Number computers in building, by type and location	4.d.
7. Number Internet-connected computers multimedia-equipped computers by type of computer and type of connection	4.d.
8. Equipment located in instructional rooms, by type of equipment and room	4.d.
9. Typical timeframe for resolving routine/minor technical problems and repairs	5.b.
10. Percent computers in working order on a typical day	5.b.
Internet Connectivity / Distance Learning	
11. Internet connection bandwidth	4.a.
12. Percent computers connected to building and/or district network	4.b.
13. Distance learning system(s) available in building	1.i.
Technology Usage	
14. Percent administrators, teachers and students routinely using education technologies	1.d., 2.e., 3.f.
15. Percent administrators, teachers, and students routinely using technology functions	1.e., 2.f., 3.g.
16. Building-level staff responsible for leadership in integrating technology into curriculum	2.c., 5.b.
17. Percent of teaching staff fully integrating technology into curriculum and instruction	2.c., 2.g.
18. Technology-mediated feedback system used in the building (or via district)	3.h.